from 1.4.90 to 31.3.93, alongwith yearwise details thereof;

(b) the number of letters out of them which were acknowledged;

(c) what is the number of letters in respect of which final replies were sent; and

(b) what is the break-up of final letters issued containing positive and negative replies respectively?

THE MINISTER OF STATE IN THE MINISTRY OF NON CONVENTIONAL ENERGY SOURCES AND THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE (SHRI S. KRISHNA KUMAR): (a) to (d). Information is being collected and will be laid on the Table of the House.

Joint Sector Companies being set up for Wind Energy

597. SHRI SUNDER SINGH BHANDARI: Will the PRIME MINISTER be pleased to state:

(a) how many joint sector companies are being set up for harnessing wind energy and generating grid quality power;

(b) what has been the mode of implementation and how would they function; and

(c) which are the State and sites selected for the purpose?

THE MINISTER OF STATE IN THE MINISTRY OF NON CONVENTIONAL ENERGY SOURCES AND THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE (SHRI S. KRISHNA KUMAR): (a) and (d) The Ministry of Non-Conventional Energy Sources has asked State Governments to consider formation of Joint Sector Companies for establishment of wind energy estates with private sector, State Government and Indian Renewable Energy Development Agency (IREDA) as shareholders. The Joint Sector Companies would take up turnkey planning, installation, operation and maintenance of individual wind turbines at a wind energy estate on behalf of small entrepreneurs/investors.

(c) The suggestion has recently been made to all potential States. Specific proposals are yet to be firmed up by them.

Power Generated through Non Conventional Sources

598. SHRI BHUPINDER SINGH MANN: Will the PRIME MINISTER be pleased to state:

(a) what is the quantum of power generated through non-conventional sources at present in India out of total power production;

(b) what are the details of the mechanism used for generating power through sea-waves in Tamil Nadu, Kerala and other coastal States; and

(c) what is the per unit cost of generating power through solar, thermal and sea-wave devices and the capital cost incurred on each of them?

THE MINISTER OF STATE IN THE MINISTRY OF NON CONVENTIONAL ENERGY SOURCES AND THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE (SHRI S. KRISHNA KUMAR): (a) The aggregate installed capacity for power generation through non-conventional energy sources is approximately 166 MW which works out to about 0.24% of the total power capacity in the country.

(b) A project based on the principle of oscillating water column and self rectifying air turbine to produce power at Vizhinjam, near Trivandrum in Kerala is being experimented. A ramp-based low head water turbine mechanism has been proposed off the coast of Andaman & Nicobar Islands, with entire investment and technology for a 1 MW plant from a Swedish firm.

(c) The per unit cost and capital cost of power generation through Solar Photovoltaics, Solar Thermal, Thermal and Sea-wave devices are given in an enclosed Statement.

Statement

Cost of Installation and Generation of Power

Sl. No.	Source/Technology	Cost of installation (Rs. in crores/MW)	Cost of generation (Rs./KWhr (Unit))
I. Non-Conventional Energy Sources			
1.	Solar Photovoltaic Power (Grid Connected)	Rs. 30.00	Rs. 10—12
2.	Solar Thermal Power (Grid Connected/Hybrid mode)	Rs. 12.00	Rs. 5—7.50
3.	Sea-Wave Power	Rs. 9.00*	Rs. 5.80*
II. Conventional Power			
1.	Thermal Power	Rs. 2.75-2.90@	Rs. 1.21-1.35@ Rs. 1.47-1.62

*Based on projected figures for A & N Sea Wave Power Project by M/s Sea Power AB, Sweden.
@Based on Central Electricity Authority figures of 1993.

Bio-Gas/Gobar Gas Units

599. DR. YELAMANCHILI SIVAJI: Will the PRIME MINISTER be pleased to State:

(a) how many bio-gas/Gobar gas units are functioning in different states;

(b) how many new units are added annually; and

(c) what are the differences between Bio-gas and Gobar gas?

THE MINISTER OF STATE IN THE MINISTRY OF NON CONVENTIONAL ENERGY SOURCES AND THE MINISTER OF STATE IN THE MINISTRY OF AGRICULTURE (SHRI S. KRISHNA KUMAR): (a) A total of about 17.63 lakh family type Biogas plants under National Project on Biogas Development (NPBD) and 1009 community & institutional biogas plants have been installed in the country upto March, 1993. According to a recent evaluation, of biogas plants set up during the Seventh Five Year Plan Period, by National Council for Applied Economic Research (NCAER) about 77.1% plants were found to be functional. Number of family type biogas plants set up in different states and the functionality percentage is given in enclosed statement. (*see* below).

(b) While a target of setting up 1.75 lakh family type and 200 community & institutional biogas plants has been fixed for the year 1993-94, 1.88 lakh and 188 biogas plants of the aforesaid types respectively, were installed during the year 1992-93.

(c) Biogas can be produced from any organic matter including cattel dung whereas the gas produced from cattle dung alone is commonly known as Gobar Gas.

Statement

Statement Indicating Total Number of Family Type Biogas Plants Set up in Different States and the Functionality Percentage

S.No.	State/Union Territories	Total Number of Plants installed upto March, 1993	Functionality Percentage
1.	Andhra Pradesh	128219	74.6
2.	Arunachal Pradesh	89	*
3.	Assam	11744	90.4
4.	Bihar	74303	58.9
5.	Goa	2084	*
6.	Gujarat	190352	88.5
7.	Haryana	24172	82.8

* States not covered by NCAER evaluation.